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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,079	10/12/2006	John Mak	100325.0208US	9101

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EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT	PAPER NUMBER
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3744

MAIL DATE	DELIVERY MODE
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09/18/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/555,079	Applicant(s) MAK ET AL.	
	Examiner William C. Doerrler	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,2,17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of Kooy et al (4,995,234) or Brundige (4,456,459-already of record) in view of Johnson et al (5,457,951).

Kooy et al and Brundige each discloses applicants' basic inventive concept, a plant which expands a liquid natural gas stream to produce work (in turbine 29 of Kooy, which is connected to generator 31 and in turbine 14 of Brundige, who states in line 68 of column 3 that electricity can be derived from the work generated by the turbine), substantially as claimed with the exception of using the refrigeration content of the

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natural gas to cool a heat source. Johnson et al's heat exchanger 16 shows this feature to be old in the liquid natural gas utilization in a combined cycle power plant art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Johnson et al to modify the natural gas heating and expanding system of either Kooy et al or Brundige by cooling a heat source in the associated plant to improve overall efficiency by reducing the fuel required to vaporize the natural gas.

Claims 3-6,8-12,16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of Shu et al (6,125,653).

Kooy et al and Brundige each, as modified above, disclose applicants' basic inventive concept, a system which vaporizes liquid natural gas to produce work which cools a heat source in the plant, substantially as claimed with the exception of using a demethanizer and a deethanizer to produce methane and ethane from the feed stream. Shu et al show this feature to be old in the natural gas processing art see (demethanizer 108 and deethanizer 130). It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Shu et al to use a demethanizer and a deethanizer to produce methane and ethane from a natural gas feed to improve the commercial aspects of the separated products. In regard to claim 4, Johnson shows a system fluid stream being compressed (28) by work derived from a system turbine. Using any part of the feed of LNG, such as the ethane, as fuel for the system is seen as

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obvious to an ordinary practitioner in the art as hydrocarbons such as ethane are well known as fuels.

Claims 1-4,8-12 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rambo et al (5,114,451) in view of Johnson et al (5,457,951). Rambo et al discloses applicants' basic inventive concept, a plant which expands a liquid natural gas stream to produce work (see column 3 lines 51-61, which states that the work can be used to generate electricity), substantially as claimed with the exception of using the refrigeration content of the natural gas to cool a heat source. Johnson et al's heat exchanger 16 shows this feature to be old in the liquid natural gas utilization art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Johnson et al to modify the natural gas heating and expanding system of Rambo et al by cooling a heat source in the associated plant to improve overall efficiency by reducing the fuel required to vaporize the natural gas. In regard to claim 4, Johnson shows a system fluid stream being compressed (28) by work derived from a system turbine. Using any part of the feed of LNG, such as the ethane, as fuel for the system is seen as obvious to an ordinary practitioner in the art as hydrocarbons such as ethane are well known as fuels.

Claims 5-7, 13-15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and

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further in view of Shu et al (6,125,653). Rambo et al, as modified above, disclose applicants' basic inventive concept, a system which vaporizes liquid natural gas to produce work which cools a heat source in the plant, substantially as claimed with the exception of using a deethanizer to produce ethane from the feed stream. Shu et al show this feature to be old in the natural gas processing art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Shu et al to use a deethanizer to produce ethane from a natural gas feed to improve the commercial aspects of the separated products. Rambo further shows a heat exchanger 41, which uses the incoming LNG to provide recondensing duty to the reflux stream reentering the column.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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Claims 1,2,17 and 18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10 and 19 of U.S. Patent No. 7,574,856. Although the conflicting claims are not identical, they are not patentably distinct from each other because the earlier patent claims a system for generating electricity that uses LNG which is vaporized while providing refrigeration, with the vaporized LNG used as working fluid in an expander to produce electricity. While the earlier patent contains further specifics, the current claims are broader in scope and will dominate the earlier patented claims if allowed without a suitable terminal disclaimer. One of ordinary skill in the art would consider it obvious that the power plant system from the earlier claims could be operated without the heat exchanger specifics of the claims and still provide a viable system for generating electricity.

Response to Arguments

Applicant's arguments filed 7-8-2009 have been fully considered but they are not persuasive. The remarks pertaining to the Markbreiter reference have been considered and were persuasive. A similar rejection has now been made using Kooy et al and Brundige, each of which use the vaporizing LNG as a working fluid in a turbine used to generate electricity. The remarks pertaining to the rejection using Rambo et al were not persuasive. Johnson is not relied upon to show the natural gas used as a working fluid. It is merely relied upon to show the use of system heat to vaporize LNG entering the system. Applicant states that such an amount of heat will not produce a significant amount of work. As Rambo states the incoming liquid would be pumped, prior to

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vaporization, the amount of work produced would increase. Further, applicant has not claimed an amount of work produced, so any amount would meet the limitations of the current claims. Rambo shows a heating medium 12 that is used to vaporize the flow that is later expanded. One of ordinary skill in the art would recognize that Johnson shows a heat source used for vaporizing LNG which provides the further benefit of cooling system streams. This will increase the overall efficiency of the system by reducing the external cooling duty of the combined system. One of ordinary skill in the art would recognize that the existing heat source of Rambo could still be used if required for the system to run as designed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William C Doerrler/
Primary Examiner, Art Unit 3744

WCD